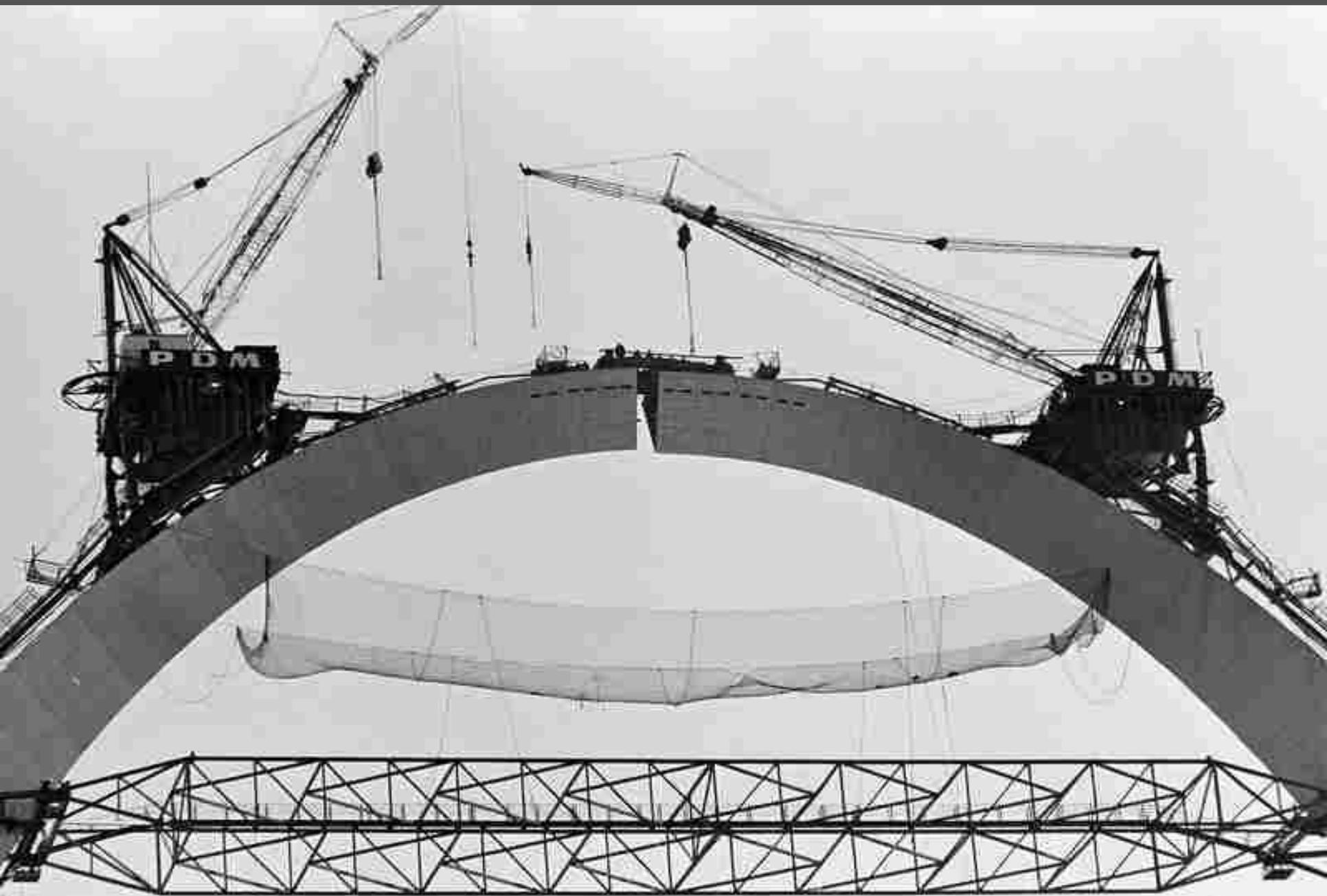


HOW DO WE WORK TOGETHER IN
THE FUTURE?

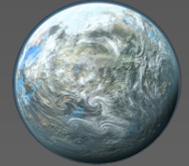


Let's make sure we meet in the middle.

- What we don't want:
 - To contradict each other on science, technological readiness, risk, cost.
 - To make the decadal survey do the interpolation for us.
 - To give the appearance of conflict or competition.
- What we do want:
 - To provide a continuum of options that encompass (to the extent possible) the full range of plausible futures.
 - To go into the decadal survey, hand-in-hand, singing kumbaya.
 - “That's a beautiful future you paint, Scott” – Paul Hertz

Difference between LUVOIR and HabEx?

- Both LUVOIR and HabEx have two primary science goals
 - Habitable exoplanets & biosignatures
 - Broad range of general astrophysics
- The two architectures will be driven by difference in focus
 - For LUVOIR, both goals are on equal footing. LUVOIR will be a general purpose “great observatory”, a successor to HST and JWST in the $\sim 8 - 16$ m class
 - HabEx will be optimized for exoplanet imaging, but also enable a range of general astrophysics. It is a more focused mission in the $\sim 4 - 8$ m class
- Similar exoplanet goals, differing in quantitative levels of ambition
 - HabEx will *explore* the nearest stars to “search for” signs of habitability & biosignatures via direct detection of reflected light
 - LUVOIR will *survey* more stars to “constrain the frequency” of habitability & biosignatures and produce a statistically meaningful sample of exoEarths
- The two studies will provide a continuum of options for a range of futures





Interpolation

- HabEx
 - 4m monolith off axis
 - 6.5m segmented on or off axis
 - 2-3 instruments (coronagraph, 2 GA instruments)
 - Likely starshade(s)
 - DI λ : 400-1000 nm (stretch \sim 100-1700nm)
- LUVOIR
 - \sim 9m segmented
 - 16m segmented (probably on-axis)
 - 4-5 instruments (or instrument bays)
 - Starshade as a future option
 - Short λ : 100 nm (stretch 90 nm)
 - Long λ : \sim 2.5 μ m (coronagraph), 5 μ m (O/NIRS)

Proposition

- At the very least:
 - Don't contradict each other.
 - Reconcile our science, technologies, risks, costs.
 - Common appendix in both final reports?
- Better:
 - Delta up from 6.5m
 - Delta down from 9m
 - “Study” a joint architecture (another ring around 6.5m?)
 - Light touch joint study (may be additional funding for this)